

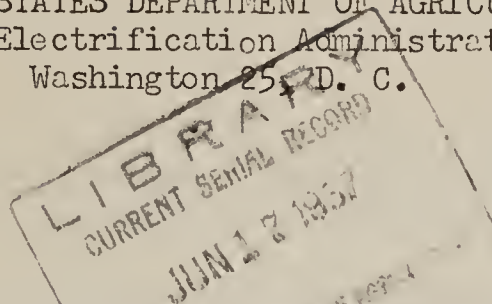
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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Washington 25 D. C.



March 1957  
Issue No. 15

Telephone Engineering Newsletter

Newsletters are intended to provide a means of answering questions that arise in the field and to advise the field of new developments. They are not intended to be instructions nor to replace in any respect the presently approved channels for establishing requirements and procedures. Suggestions for news items will be appreciated.

United States Instrument Corporation Central Offices

REA has now approved four trial installations of central office equipment to be furnished by the United States Instrument Corporation, Charlottesville, Virginia. No further approvals of this equipment will be granted until more information on its ability to meet our specifications is obtained and the long range plans of the company are firmed up.

TE & CM Sections Soon to be Issued

The following TE & CM sections are in reproduction:

New 512	Telephone Traffic - Manual Toll Board Equipment
Rev. 515	" " Measurements
New 520	" " Large Dial Central Offices
Rev. 611	Design of Pole Lines
Add. 616	Construction of Open Wire Lines (Sag Tables)
Rev. 650	Guys and Anchors on Wire and Cable Lines
Rev. 901	Carrier Fundamentals
New 930	Use of Radio in Telephony

Schedule of Staking Conferences

A staking conference is scheduled to be conducted by the field engineers at Bloomington, Indiana, March 20, 21 and 22. Staff engineers will conduct staking conferences at Nashville, Tennessee, April 30, May 1 and 2 for Section 7, and at Atlanta, Georgia, May 13, 14 and 15 for Section 6.

Wire Chief's Test Set Demonstrations

Demonstrations of the wire chief's portable demonstration set will be made at a Missouri managers' meeting scheduled for April 16, 17 and 18 at Columbia, Missouri, and at the Illinois managers' meeting scheduled for April 18 and 19 at Springfield, Illinois. These two



demonstrations will be made by W. P. Stokesberry, staff engineer. A demonstration is to be made by the field engineer at a borrowers' meeting scheduled for the week of May 6 at Brunswick, Maine.

The wire chief's demonstration set has related material including handout sheets, slides and demonstration notes in such form that a minimum of preparation is needed by anyone who gives a demonstration.

#### Insulated Wire and Cable Industry Conference

Representatives of the insulated wire and cable manufacturers have been invited to a conference with REA staff engineers, scheduled for April 23 and 24 in Washington, D. C. The subjects proposed for discussion include:

- Color Coding of Wire and Cable
- Revision of REA Specification PE-14 to cover larger cable sizes and other details
- Direct Burial Cable
- Direct Burial Wire
- Tentative REA Specification for Bridle Wire
- Tentative REA Specification for Parallel Distribution Wire
- Station Wire (Inside - Outside Type)
- Insulated Parallel Circuit with Air Dielectric for Rural Telephone Service

#### Fibreglass Crossarm Trial

The fibreglass crossarms mentioned in Newsletter No. 12, May 1956, are to be installed at Haymarket, Virginia, by the Piedmont Telephone Company. The installation includes ten 10 foot crossarms which will carry three bare wire circuits attached to the crossarms using two different schemes. One circuit will be on glass insulators with steel pins. The others will be clamped on the arms by toggle bolts extending into the hollow crossarms.

#### Status of Cook Stranterm

As outlined in our memorandum of September 26, 1956, the original design of Cook Stranterms with plastic stubs resulted in some defective terminals being installed in the field. The manufacturer redesigned the stub entry arrangement and very little trouble has been experienced with the re-designed product. The inspection procedure and criteria stated in the memorandum of September 26 appears to be satisfactory and no modification to this is planned. This procedure and criteria should be applied by the owners in the inspection of their plants when there is any indication of trouble that may be due to defective terminals.

Difficulties have arisen where a portion of terminals installed on a system have been found defective in rainy weather. There is no easy means yet developed to detect whether terminals not showing defects now will show up later after guarantees expire.





### Standardization of Improved Type Telephone Sets

At present REA has two categories of telephone sets, based on transmission capabilities, on the list of acceptable materials. The revised Construction Contract, REA Form 511, retains only the 5 db improved set. All telephone set manufacturers have been notified that the "Standard" sets will be removed from the list on August 1, 1957. All systems now in the design stage should specify only 5 db improved sets.

### Field Trial of Mytigap Protectors

The Cook Electric Company has designed and is now producing a metal-to-metal discharge gap known as the Mytigap. REA is planning a field trial installation of Mytigaps in the Surry Telephone Membership Corporation's system, Dobson, North Carolina, to obtain information on the effectiveness of Mytigaps as compared to the carbon-to-carbon Minigaps. It is anticipated that the units will be installed in April and the trial period will be extended through the 1957 lightning season.

### Fuseless Station Protectors

The use of fuseless station protectors in accordance with the 1953 National Electrical Code is covered by present REA practices. During the past year very few fuseless station protectors appear to have been used by REA borrowers although they are believed to have definite advantages over the fused type protectors for the following reasons: (1) reduced hazards to the public and to telephone company personnel due to the elimination of hot drop wires which can result from fuse operation with fused type protectors; (2) reduced maintenance expense by eliminating fuse maintenance; (3) reduced drop wire installation expense by the use of uninsulated attachments; (4) less lightning arrester block maintenance because the cylindrical carbon blocks used in fuseless protectors should require less maintenance than the open rectangular blocks used in fused protectors; and (5) less weathering maintenance because of the improved mechanical design of the enclosures of fuseless protectors.

Because of these indicated advantages REA has been recommending the use of fuseless protectors in preference to fused type protectors wherever permitted by its present practices. The 1956 edition of the Code broadens the permissible application of fuseless protectors, but advantage cannot yet be taken of the new code provisions for lack of protectors that meet the new code requirements.





It is understood that borrowers are not using fuseless protectors because: (1) the initial cost is usually no lower and in some instances is higher than for fused type protectors, and (2) since their use has been restricted to stations served from cable only, the borrowers do not believe much maintenance savings would result from their use.

REA cost figures show that bid prices for fuseless protectors have usually been slightly higher than for fused protectors but the quantity of fuseless protectors has been so small that it does not constitute a valid comparison. On sizeable quantities the bid price of fuseless protectors should not generally run higher than for fused type protectors, and the use of uninsulated drop wire attachments in time should result in some savings on drop wire bids.

The real advantage of fuseless protectors should be in maintenance and operation. If these supposed advantages are not being realized in service, specific reports would be appreciated on the performance of fuseless protectors so they can be reappraised on the basis of actual experience.

#### Proposed Changes in TE & CM Section 205

Present REA practices do not clearly state the responsibility of the borrowers' engineers to provide adequate grounding in REA borrowers' systems. This situation is to be corrected by revising TE & CM Section 205 to state this responsibility specifically. The revision will require the engineers to investigate the general grounding conditions along backbone routes in the area within the system's boundaries. This should be accomplished by measuring a number of existing, or test, ground-electrodes or by obtaining the results of measurements made by others. Sufficient data should be obtained to enable engineers to estimate: (1) the ground resistance values obtainable from standard and auxiliary grounds; (2) the size and type of grounds that will be used for cable plant buffer protection and other system protectors, to obtain effective grounding; (3) the general protection scheme that will be followed with cable plant. The revision will also require engineers to investigate the basic characteristics of power systems in the area that are involved in crossings or joint use with the proposed system. The results of these investigations are to be included as a part of the ACD report.

#### Use of Tandems and Drop Brackets in Windy Areas

Mid-span hits are showing up as serious problems in systems recently constructed in the windy areas using tandem or drop type transposition brackets. Consulting engineers and borrowers in these areas should be informed of this and urged to use increased tensions, coupled with the use of point type transposition brackets, or insulated line wire



to minimize the service degradation and maintenance expense associated with the hit problem. A section of the Telephone Engineering and Construction Manual on the construction of outside plant utilizing insulated line wire is under preparation with a high priority on its issuance. Pending issuance of this section, we will furnish on request, information on the use of insulated line wire for individual applications.

Telephone Technicians in Field around May 1

The four telephone technicians will have completed their training courses on May 1 and will be sent to their field headquarters. These will be as follows:

William E. Morris - Mitchell, South Dakota

William S. Hills - Colorado Springs, Colorado

Benjamin R. Head - Pauls Valley, Oklahoma

Evan E. Lavinghouse - Montgomery, Alabama

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